Ministry of Agriculture And Rural Development

Central Office of Steering Committee on Flood Control

NATURAL DISASTER MANAGEMENT IN THE CONTEXT OF CLIMATE CHANGE

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Climate change scenarios , its impact to management of natural disaster risk

Research studies, especially those from MONRE, have shown that climate change can be seen through:

1. Sea level rise;
2. Rising temperature;
3. More extreme climate events (irregular in time and frequency of natural disasters like storms, floods, droughts, flash floods and land slides, etc.)
4. Effects → Changes of ecosystems → not good for current life

Three out of the above 4 phenomena change slowly. We well realised impact of climate change because :

We have to face increasing natural disasters day to day

Content

- Climate change scenarios, its impact to management of flood control and natural disaster prevention
- Past experience in natural disasters (as evidence of climate change)
- Natural disaster risk management – a process of climate change adaptation
- Key next steps

2. Past experience in natural disasters

Over the last 20 years we can see

Storm

- In 1996-2005: everage **5 storms** in the East Sea
- 2006: **7 storms**
- 2007: **9 storms**
- 2008: **10 storms**
- 2009 (up to now) **5 storms**

Storms that caused significant damages

1. **Storm No.7 (Linda) attacted Ca Mau in 2/11/1997;**
2. **Storm No.7 attacted Thanh Hoá năm 2005 (Hai Hau seadike distrubted);**
3. **Storm No.1 (Chanchu) in 2006năm 2006 – more than 200 died in the sea;**
4. **Storm No.6 (Sanxen) attacted Da Nang in 2006;**
5. **Storm No.9 (Durian) attacted Mekong Delta in 2006;**

Flood

- 1971, 1986, 1996, 2008: **Flood in Red – Thai Binh river system**
- 1999: **Flood in Central Vietnam**
- 2000, 2001: **Flood in the Mekong Delta**
- 2007: **Flood in Thanh Hoa and Ninh Binh rivers**
- 2008: **Heavy rain and severe flood in the Red River Delta**

Flash flood

- period 1970 – 1980 – **7 flash flood**
- 1981 – 1990 - **8 flash flood**
- 1991 – 2000 - **103 flash flood**
- 2001 – 2007 - **87 flash flood**

3. Natural disaster risk management – adaptation to climate change

Historical changes of natural disasters

Flood control dike systems established since 1000 years ago. Dai Han dyke was constructed since Tran, Ly, Le time

In Nguyen dynasty (Gia Long King time) due to more dike distruption, there was a debate on dike should be kept or not. Conclusion from a consultative meeting: **Dike system should be kept and improved**

Nguyen Dynasty (1857)
Nguyễn Tư Giản (10 ways of water control)

Responding/Adaptation measure

Flood control dike systems established

10 ways of water control

1. Establishment of seadike system
2. Clearing of coastal mouths
3. Dike embankment
4. Creating lakes on branches of river
5. Dredging flowing channels
6. Maintaining alluvium
7. Money reserve
8. Salary incentive
9. Extending fund raising
10. Allocate human resources to take care dike systems

Nguồn: Đê điều Việt Nam – NXB Nông nghiệp 1995

3. Natural disaster risk management – adaptation to climate change

Historical changes of natural diasters

In 1940, water level in Hanoi increased dramatically

- Dike destruction in 1945 in many places
- Water level in Hanoi reached 11.86 m
- President Ho had to spent to the last Dong to rebuild dikes and recover peoduction and people' life (cost 2 millions Indochina money)

Responding/Adaptation measures

Day Dam completed in 1937

In 1940, Day Dam was challenged

On 28/5/1946 President Ho Chi Minh and Government issued a decision to establish a Central Committee on Dike Management for all levels

Ministry of Water Resources was estabilished in 1958

In 1963 Poliburo of the Central Communism Party issued measures for flood control in the Red River

Nguồn: Đê điều Việt Nam – NXB Nông nghiệp 1995

3. Natural disaster risk management – adaptation to climate change

Historical changes of natural disasters

During French time (1884-1945)
In 1915, severe flood with water deep of 13 m caused significant damages

Responding/Adaptation measures

After 1915, 10 measures were adopted

1. Watershed rehabilitation
2. Construct reservoirs upstream
3. Flood drainage partly from Da river into Ma river
4. Increase flood control capacity of Dai Ha dike up to 11.2m of water
5. Take out all outside dikes that make sedimentation
6. Make the outside dikes to a certain high level
7. Up-grade dike system
8. Improve Hong river's inner channel
9. Build in regulated lakes
10. Enlarge exist channels and increase divergent capacity

Nguồn: Đê điều Việt Nam – NXB Nông nghiệp 1995

3. Natural disaster risk management – adaptation to climate change

Historical changes of natural diasters

In 1971, severe flood (more than 45 year record) destroyed many dikes

Poliburo (Central Communism Party) ratified 6 measures for flood control in the Red River

Responding/Adaptation measures

Dike protection, flood prevention

6 main measures :

- **Watershed forest plantation**
- **Up-grade and improve dikes**
- **Dredging to clear flood flow**
- **Slowdown flood flows**
- **Build reservoir upstream**
- **Organise dike protection during flood season**

4 on-site principles applied: on-site command, on-site human resources, on-site equipment and on-site logistics

There have been substantial results in responding to natural disasters in the past

change in awareness

relevant measures are introduced appropriate adaptation and prevention

Nguồn: Đê điều Việt Nam – NXB Nông nghiệp 1995

3. Management of natural disaster (1999)

•In 1999, severe flooding in Central Vietnam was an extreme climate event with heavy rain, up to 2000 mm in some stations, over 3-4 consecutive days.
•Total damage:
more than 500 people died;
3000 billion VND

Measures for flood control in Central Vietnam → **Prevention**, **Mitigation**, **Adaptation**

1. Forest protection and plantation
2. Programme on shifting agriculture crop season
3. Construct hydraulic work and dike systems.
4. Program on aquaculture development
5. Programme on transportation development

Quyết định của Chính phủ số : 668 /TTg *ngày 22 tháng 8 năm 1997*
Về phương hướng, biện pháp giảm nhẹ thiên tai và những chương trình chủ yếu phát triển kinh tế - xã hội các tỉnh ven biển miền Trung

3. Management of natural disaster (flash flood)

Period 1970 – 1980: 7 flash floods
1981 – 1990: 8 flash floods
1991 – 2000: 10.3 floods/year
2001 – 2007: 87 flash floods. In 2006: 25 floods, in 1996 and 1998: 15 floods/year, 14 floods each year in 1997, 1999, 2001, 2007. In the period 1990-2007 there were 194 flash floods in the whole country.

•7/2009 flash flood in Bac Kan causing 35 people died

Government passed Directive 32/2004/CT-TTg on some measures to prevent flash flood
- Development of master plan to reallocate residents, reorganise production, crop structures and development of sustainable infrastructure.
- Development of flash flood warning system
-Development of criteria to define areas prone to flash flood

Chính phủ đã có chỉ thị số 32/2004/CT-TTg
Về một số biện pháp phòng, tránh lũ quét

3. Management of natural disasters (2000 và 2001)

In 2000 – 2001, the most severe flooding within 70 years hit the Mekong Delta which posed direct impact to 5 million people.
Flooding in the Mekong Delta together with many flash flood and cyclons had made more than 700 people died/year and total damage was 5000 billion VND (equivalent 400 million USD).

Measures for flood control in Mekong Delta →

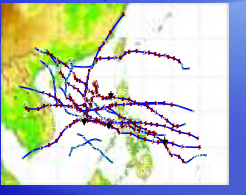
Decision 99/QĐ-TTg of Prime Minister on measures for flood control in Mekong Delta

Living safety together with flood
Residental groups and lines

- **Protected dike and hydraulic work**
- **Flood exist channel**

Decision 99/TTg and Decision 173/2001/QĐ- TTg

3. Management of natural disasters (storm in 1997 and 2006)



Storm Linda (Number 7) 1997
This storm hit Southern provinces: hundreds boats sunk and more than 3000 people died and missing.

Storm Chanchu (No.1) 2006
Actively moved in the East Sea with irregular routes 13 boats sunk, 5 boats missing; 266 people missing and died.

Adaptation measures

After Linda storm, there has been a direction to invest in big boats for off-shore fishing

After Chanchu: continue to develop programmes on

- Ports for safety storm hiding

- Strengthening fleet management and communication system

3. Management of natural disasters (2005,2006)




Damrey storm (No.7) in 2005….
- Destruction of seadikes in Nam Định, Thanh Hóa, Hải Phòng; households were flooded with seawter. Transportation system of this region was devided.

Solution: Strengthen and up-grade seadike

Government passed Decision 58/2006/QĐ-TTg on 14/3/2006 about upgrading seadike from Quang Ninh to Quang Nam.

And in 2009 the Government issued a Decision *667/QĐ-TTg* about strengthening and upgrading seadike from Quang Ngai to Kien Giang.

- **Construct dike system to prevent sea level rise and storm waves**
- **Plantation for wave prrevention**

3. Management of natural disasters (currently)

- Southern provinces are implementing Programme on contruction of residential houses in groups and lines in flooding region of Mekong Delta.
- Ensure safety houses for 52,356 households;
- Mountainous provinces are reallocating people outside degerous areas


3. Management of natural disasters (currently)

Up to now, we are kean to implement the above mentioned solutions/measures which do bring effective results.

In response to climate change scenarios, Vietnam has clearly identified measures through specific programme for each line mistry and sector.

Currently, MARD has actively implemented the followings:

- **National Strategy on Flood and Storm Prevention and Natural disaster Mitigation to the year 2020.**
- **Programme to upgrade sea dike systems in relation to sea level rise as impact of climate change (interested in forest plantation from 500 to 1000 m to protect dike) *(Decision No. 58/QĐ-TTg and Decision No. 667/QĐ-TTg)***
- **Programme on awareness raising for communities in community-based natural disaster management (has been ratified by the Gov. by a Decision 1002/QĐ-TTg on 13/7/2009).**
- **Developing of programme on upgrading river dike system.**

4. Key tasks in near future

- Continue research, update information for climate change scenarios in order to introduce appropriate adaptation measures.
- Get more invest capitals for implementing National Strategy on Storm and Flood Control and Natural Disaster Mitigation to the year 2020; and other programmes/projects
- Review and modify Flood Planning for riverbasins; dike system planning based on climate change scenarios.
- Integrate natural disaster prevention and mitigation into socio-economic development plans of sector and regions;
- Apply standards for work and house construction which guarantee natural disaster safety for each region
- Awareness raising for communities .
- Operational procedures for reservoirs.
- Develop law on Natural Disaster Prevention and Mitigation.


Thank you for your attention